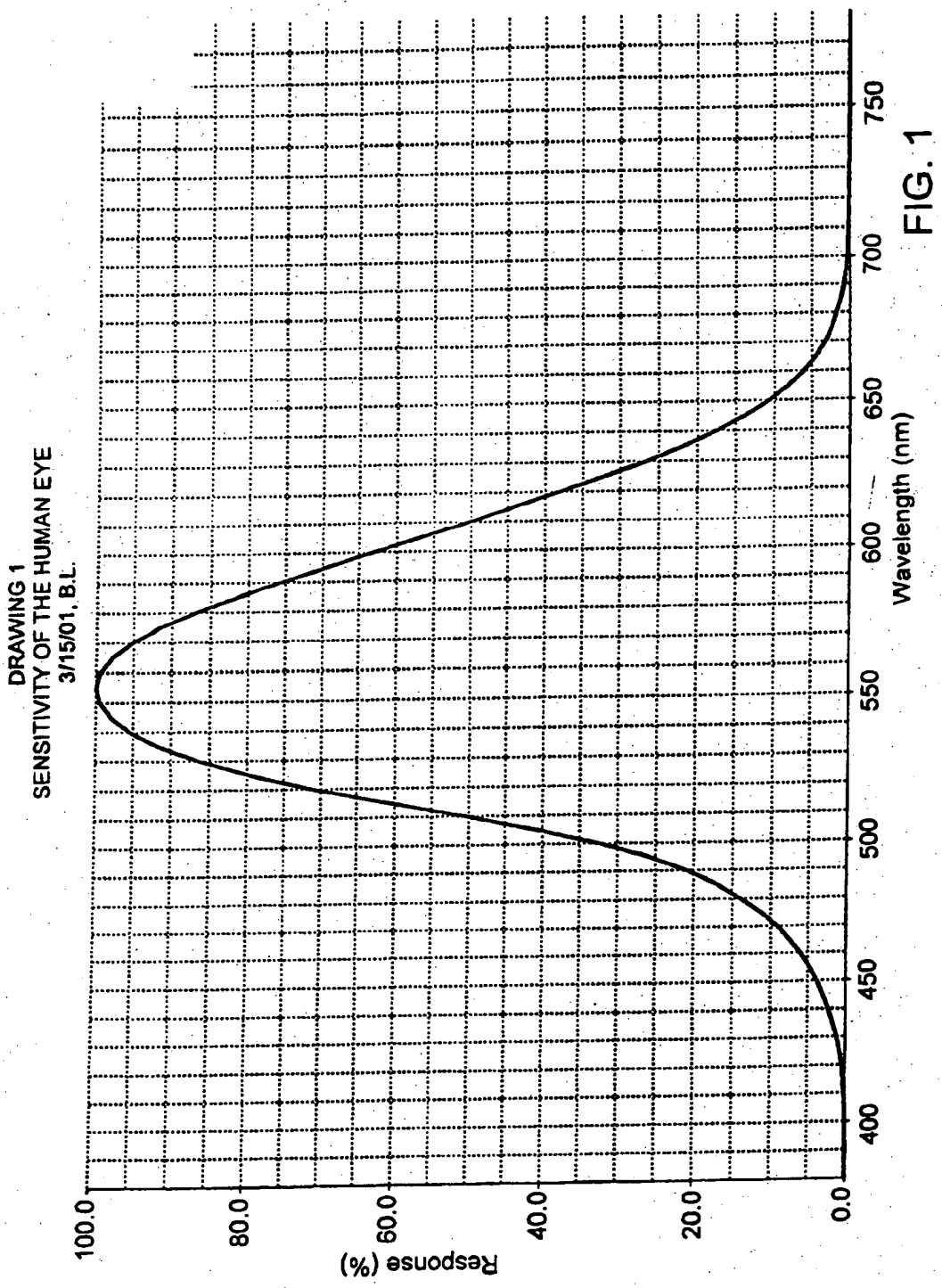

DRAWING 1
SENSITIVITY OF THE HUMAN EYE
3/15/01, B.L.
Response (%)
100.0
80.0
60.0
40.0
20.0
0.0
400
450
500
550
600
650
700
750
Wavelength (nm)

FIG. 1

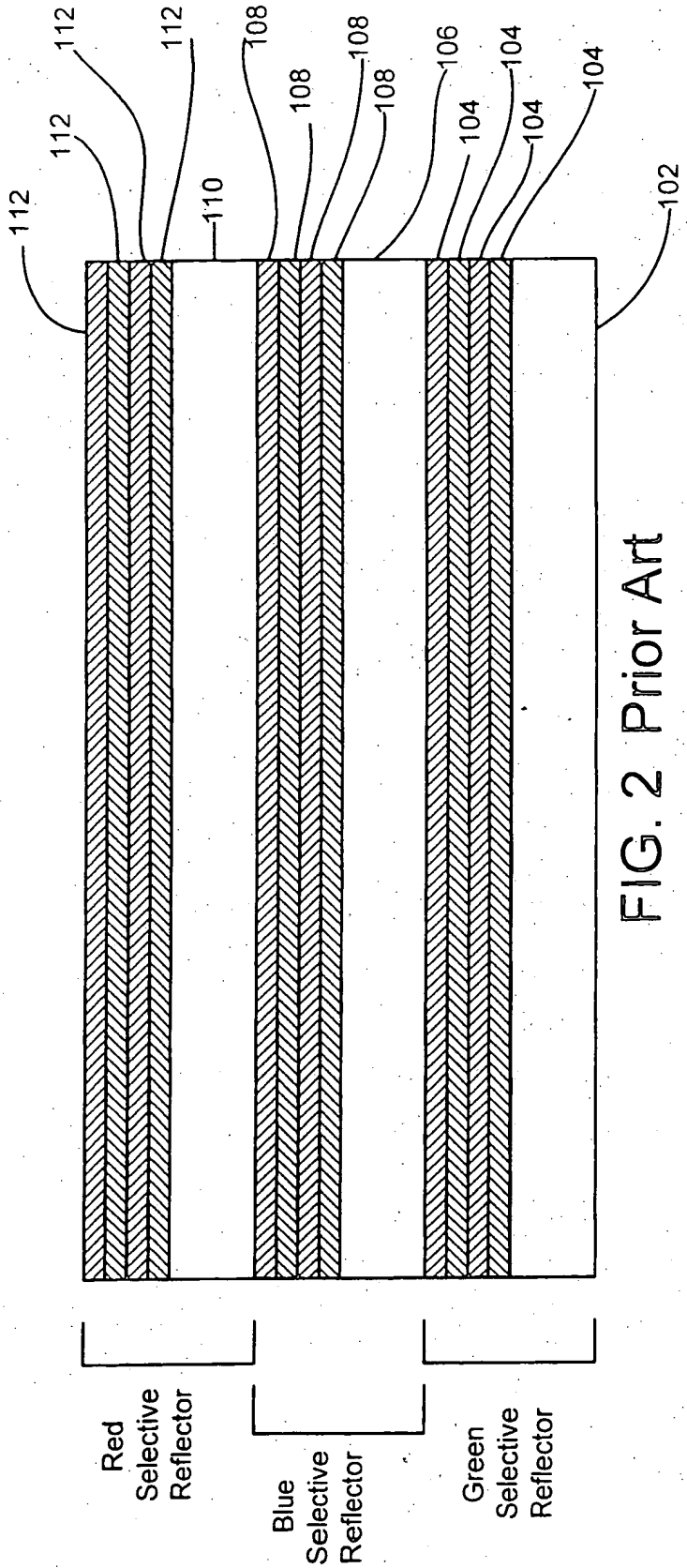


FIG. 2 Prior Art

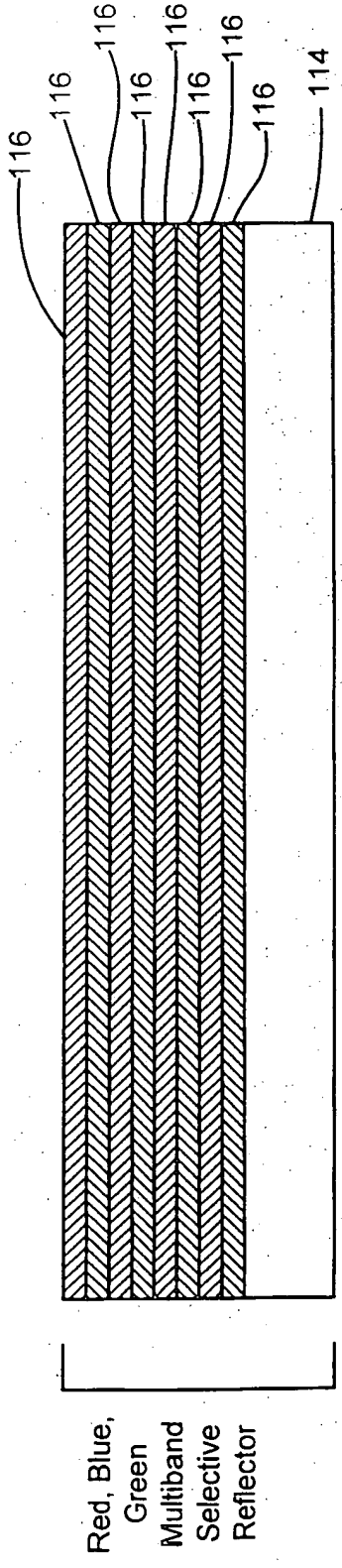


FIG. 3

FIG. 4A

Material	Thickness(nm)	Material	Thickness(nm)
Si	600		
SiO_2.	3.30	SiO_2	23.91
Nb_2O_5	3.30	Nb_2O_5	23.91
SiO_2	50.34	SiO_2	100.00
Nb_2O_5	50.34	Nb_2O_5	100.00
SiO_2	100.00	SiO_2	26.48
Nb_2O_5	100.00	Nb_2O_5	26.48
SiO_2	59.38	Nb_2O_5	97.79
Nb_2O_5	59.38	SiO_2	97.79
SiO_2	100.00	SiO_2	100.00
Nb_2O_5	100.00	Nb_2O_5	100.00
SiO_2	15.15	Nb_2O_5	6.01
Nb_2O_5	15.15	SiO_2	6.01
SiO_2	99.45	SiO_2	35.12
Nb_2O_5	99.45	Nb_2O_5	35.12
SiO_2	43.95	Nb_2O_5	28.25
Nb_2O_5	43.95	SiO_2	28.25
SiO_2	48.60	SiO_2	19.65
Nb_2O_5	48.60	Nb_2O_5	19.65
SiO_2	55.28	Nb_2O_5	30.09
Nb_2O_5	55.28	SiO_2	30.09
SiO_2	70.29	SiO_2	4.27
Nb_2O_5	70.29	Nb_2O_5	4.27
SiO_2	78.38	Nb_2O_5	21.91
Nb_2O_5	78.38	SiO_2	21.91

FIG. 4B

Material	Thickness (nm)
SiO_2	118.12
Nb_2O_5	97.99
SiO_2	144.36
Nb_2O_5	63.14
SiO_2	159.07
Nb_2O_5	92.24
SiO_2	68.79
Nb_2O_5	47.51
SiO_2	74.24
Nb_2O_5	62.77
SiO_2	158.03
Nb_2O_5	97.99
SiO_2	257.58
Nb_2O_5	131.25
SiO_2	99.71
Nb_2O_5	65.78

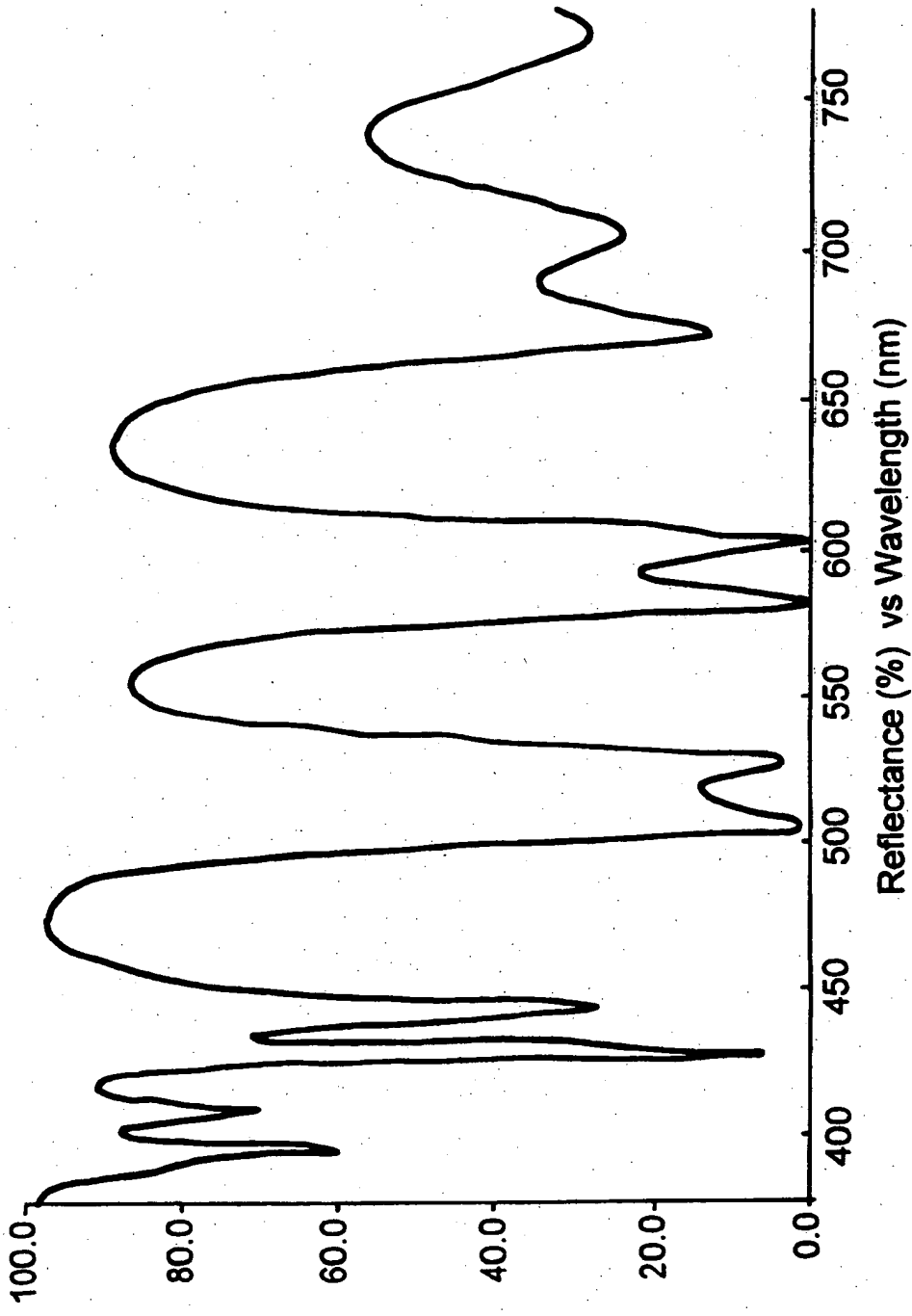

100.0
80.0
60.0
40.0
20.0
0.0
400
450
500
550
600
650
700
750
Reflectance (%) vs Wavelength (nm)

FIG. 5A

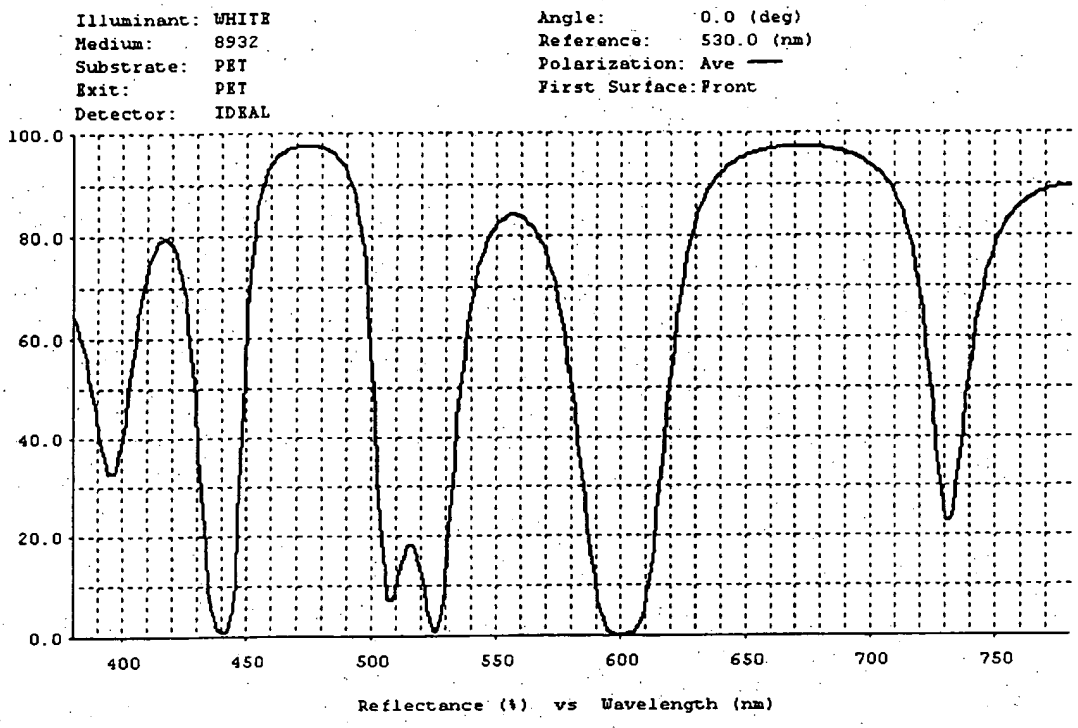

Illuminant: WHITE
Medium: 8932
Substrate: PET
Exit: PET
Detector: IDEAL
Angle: 0.0 (deg)
Reference: 530.0 (nm)
Polarization: Ave
First Surface: Front
100.0
80.0
60.0
40.0
20.0
0.0
400
450
500
550
600
650
700
750
Reflectance (%) vs Wavelength (nm)

FIG. 5B

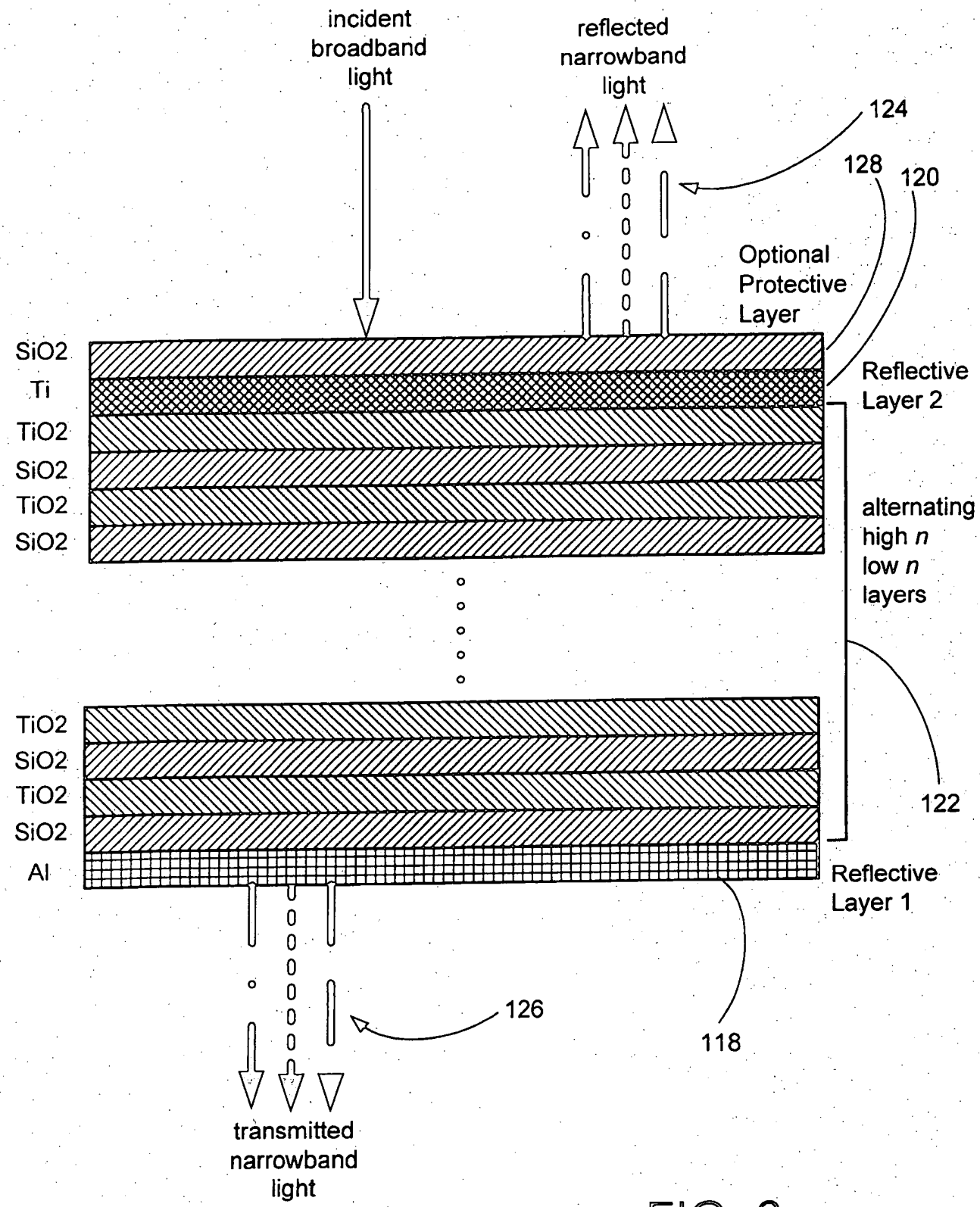
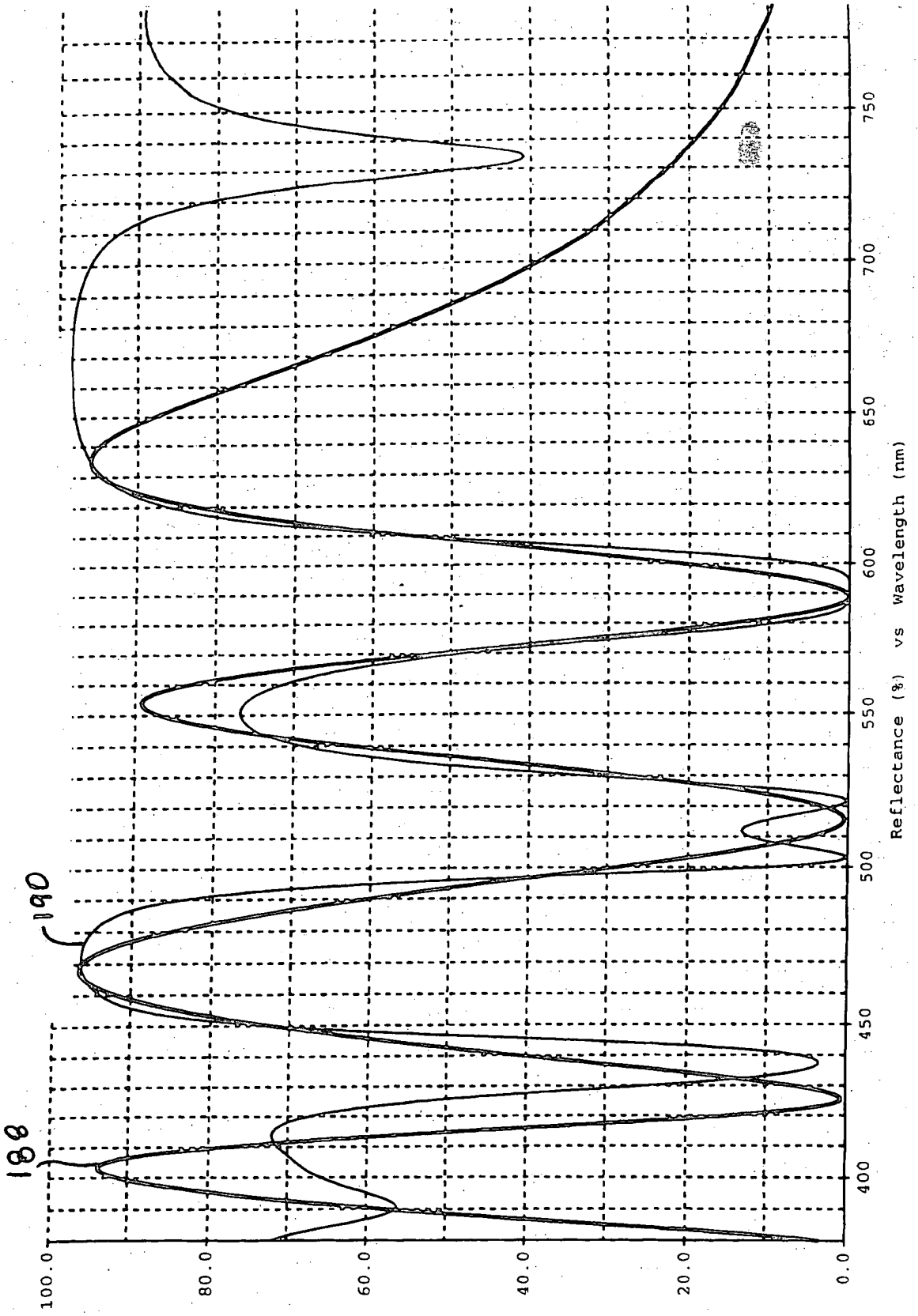

incident broadband light
reflected narrowband light
124
128
120
Optional Protective Layer
SiO2
Ti
TiO2
SiO2
TiO2
SiO2
Reflective Layer 2
alternating high n low n layers
TiO2
SiO2
TiO2
SiO2
Al
122
Reflective Layer 1
126
118
transmitted narrowband light

FIG. 6

FIG. 7

Material	Thickness (nm)	
Al	50.0 nm	Reflective Layer 1
SiO_2	86.7 nm	
TiO_2	109.0 nm	
SiO_2	122.8 nm	
TiO_2	49.1 nm	
SiO_2	145.5 nm	
TiO_2	90.0 nm	
SiO_2	131.5 nm	
TiO_2	26.8 nm	
Ti	13.3 nm	Reflective Layer 2
SiO_2	94.7 nm	Optional Protective Layer

Figure 8


188
190
100.0
80.0
60.0
40.0
20.0
0.0
400
450
500
550
600
650
700
750
Reflectance (%) vs Wavelength (nm)

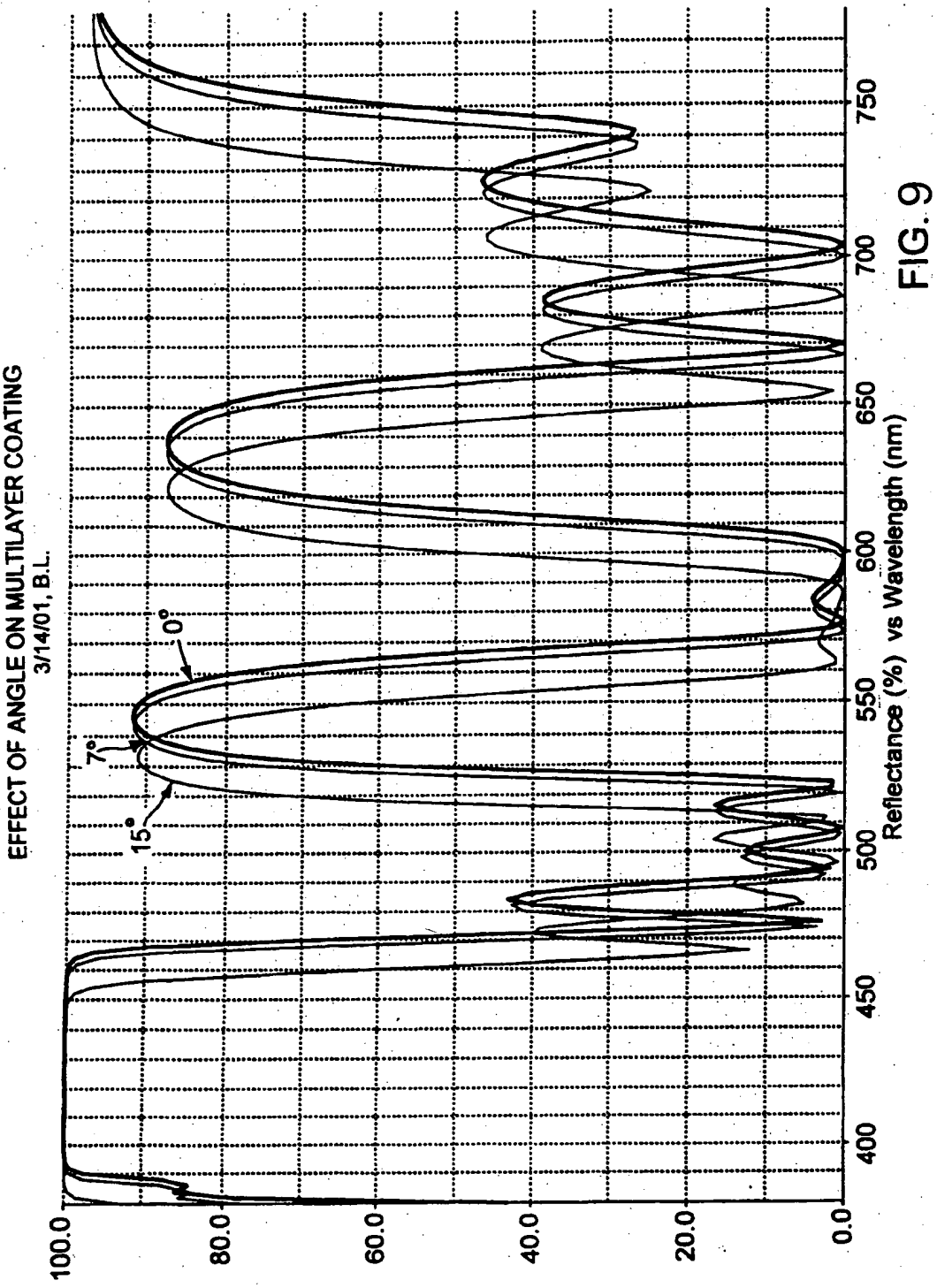
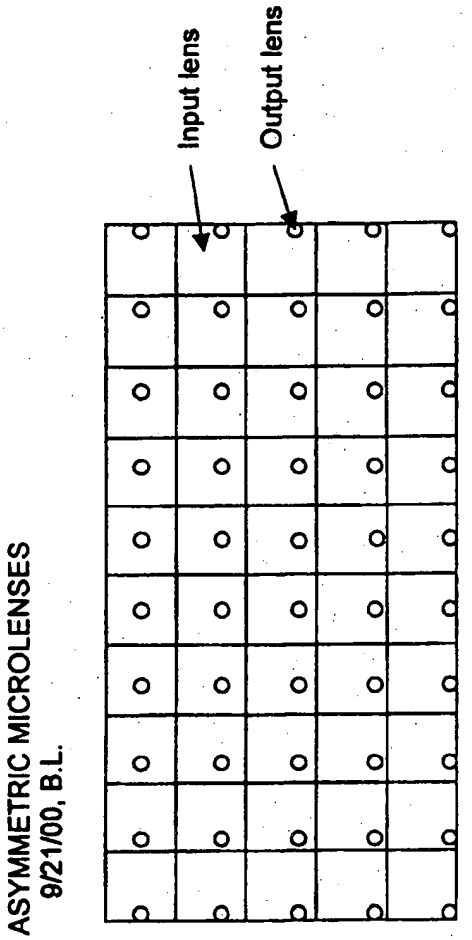
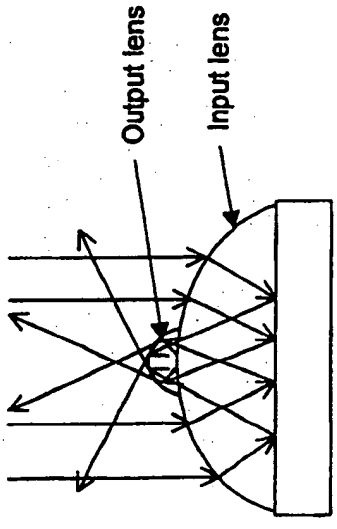

EFFECT OF ANGLE ON MULTILAYER COATING
3/14/01, B.L.
0°
7°
15°
100.0
80.0
60.0
40.0
20.0
0.0
400
450
500
550
600
650
700
750
Reflectance (%) vs Wavelength (nm)

FIG. 9



Front View of Entire Screen

FIG.10B



Side View of One Lens Set

FIG.10A

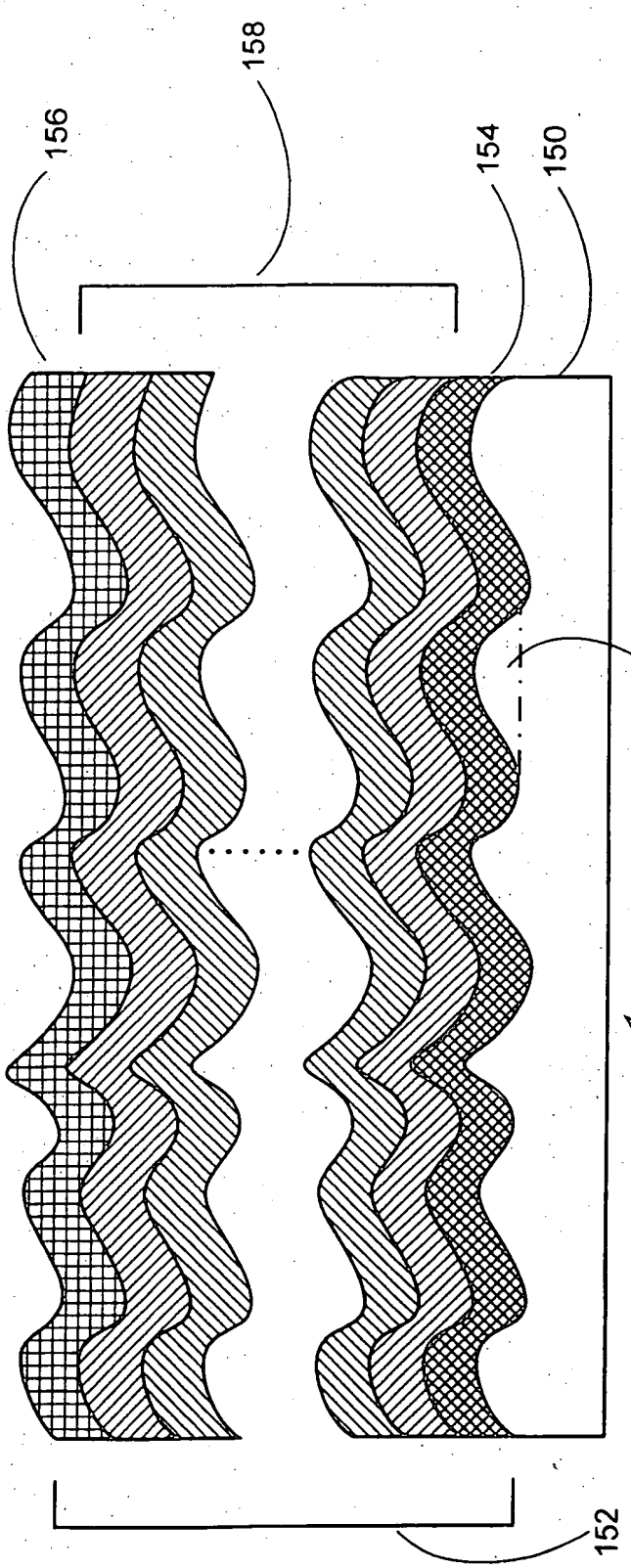


FIG. 11

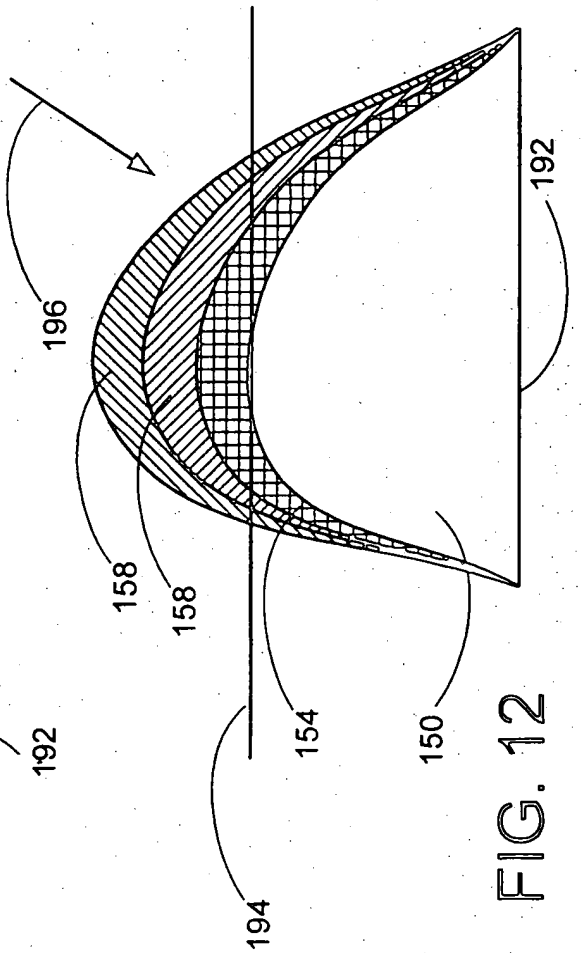


FIG. 12

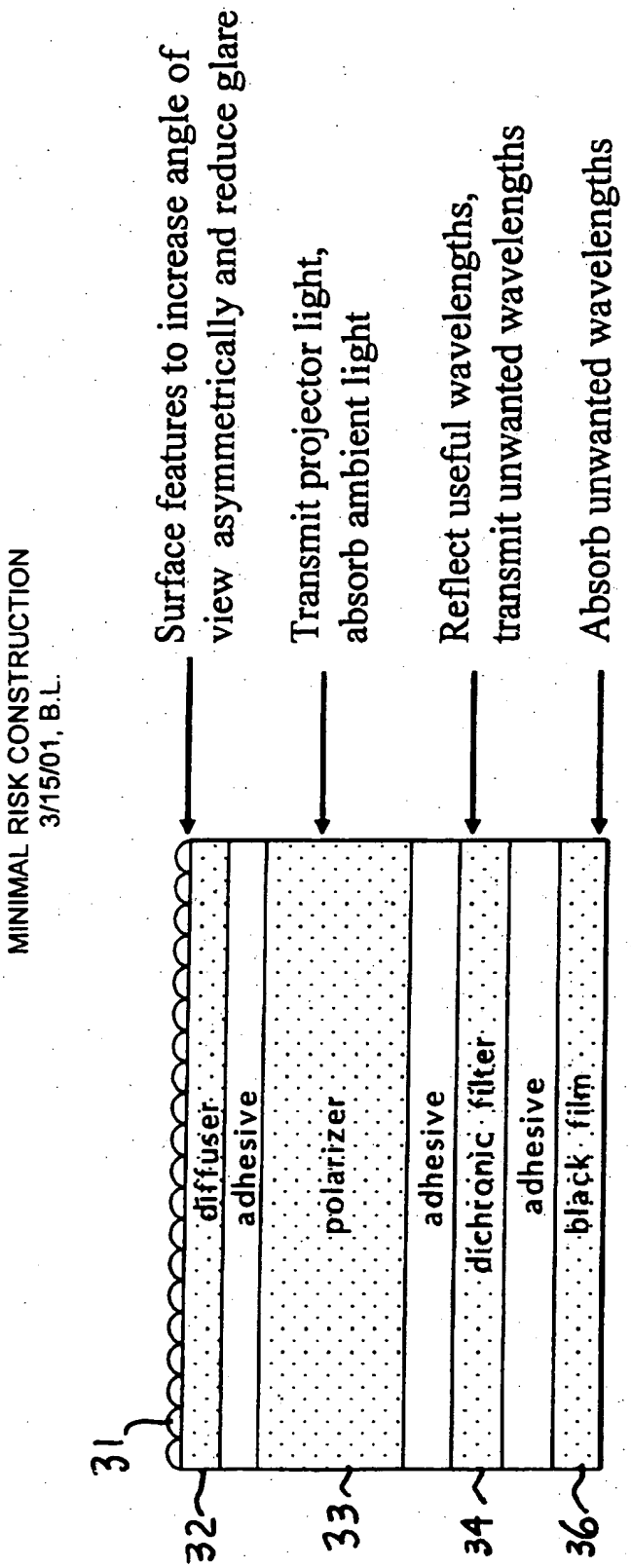

MINIMAL RISK CONSTRUCTION
3/15/01, B.L.
Surface features to increase angle of view asymmetrically and reduce glare
Transmit projector light, absorb ambient light
Reflect useful wavelengths, transmit unwanted wavelengths
Absorb unwanted wavelengths
31
diffuser
adhesive
polarizer
adhesive
dichroic filter
adhesive
black film
32
33
34
36

FIG.13

ADVANCED CONSTRUCTIONS
5/31/01, B.L.

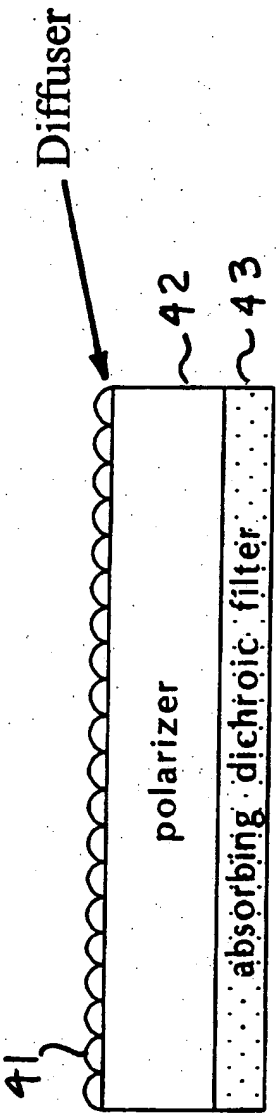


FIG.14A

a. Front surface diffuser only

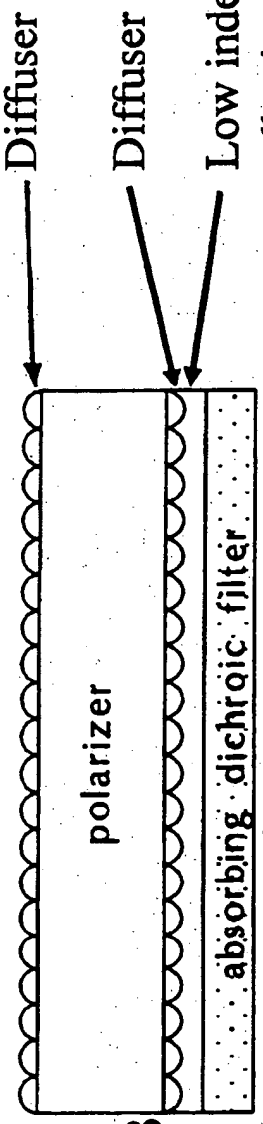


FIG.14B

b. Front surface diffuser and immersed diffuser

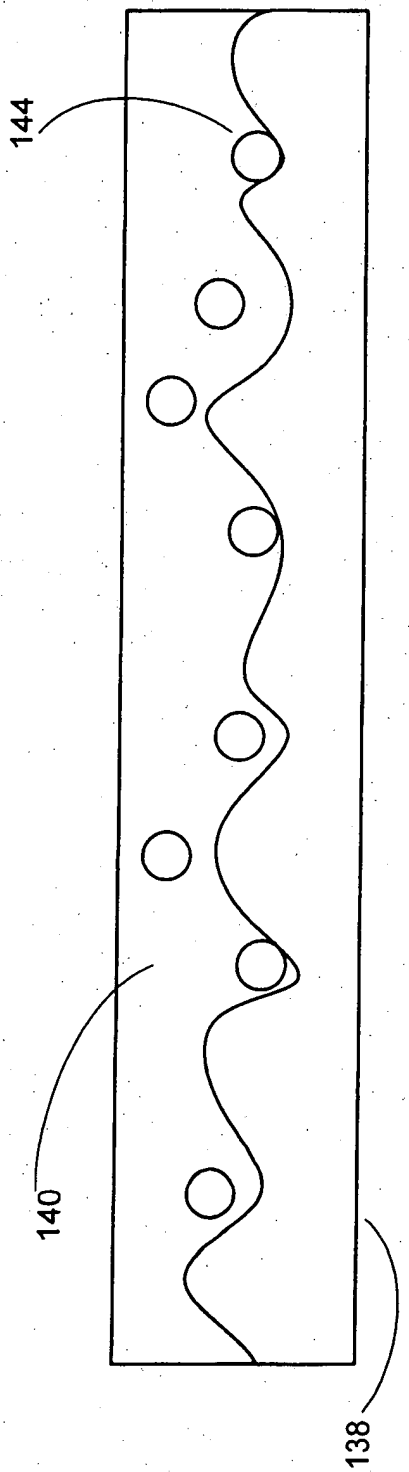


FIG. 15A

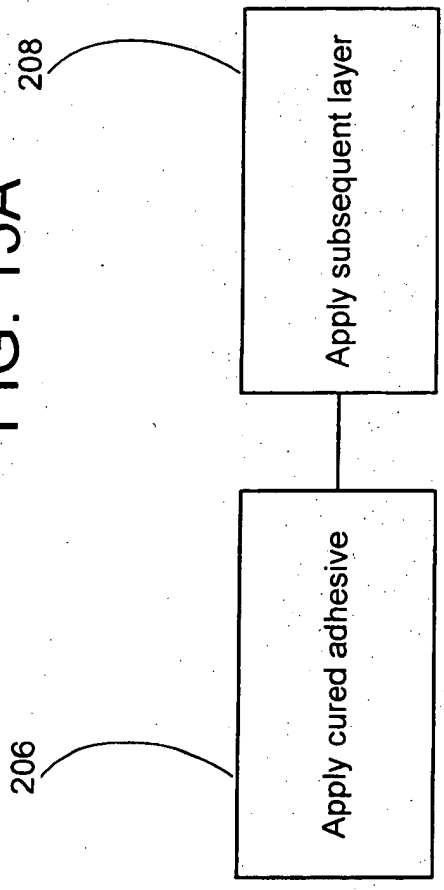


FIG. 15B

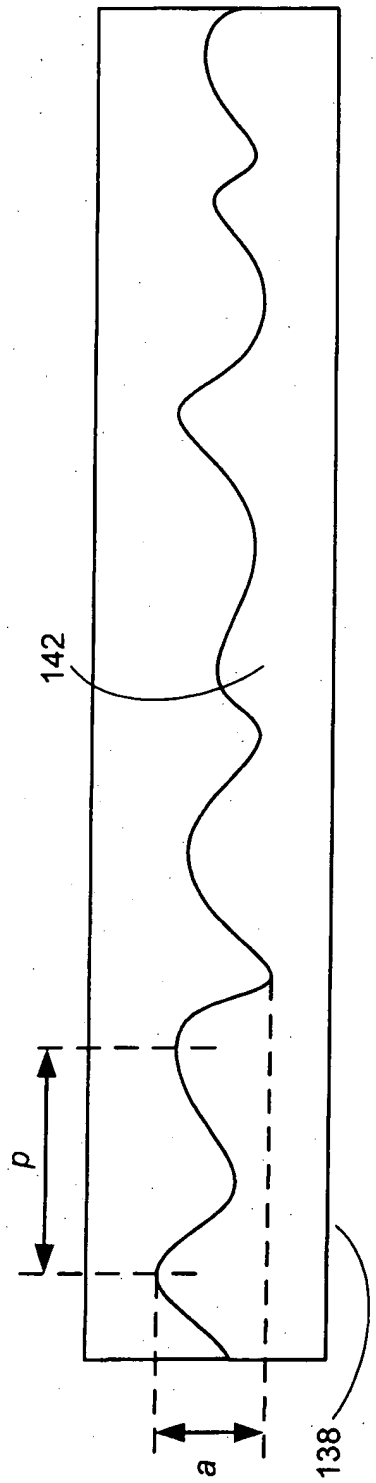


FIG. 16A

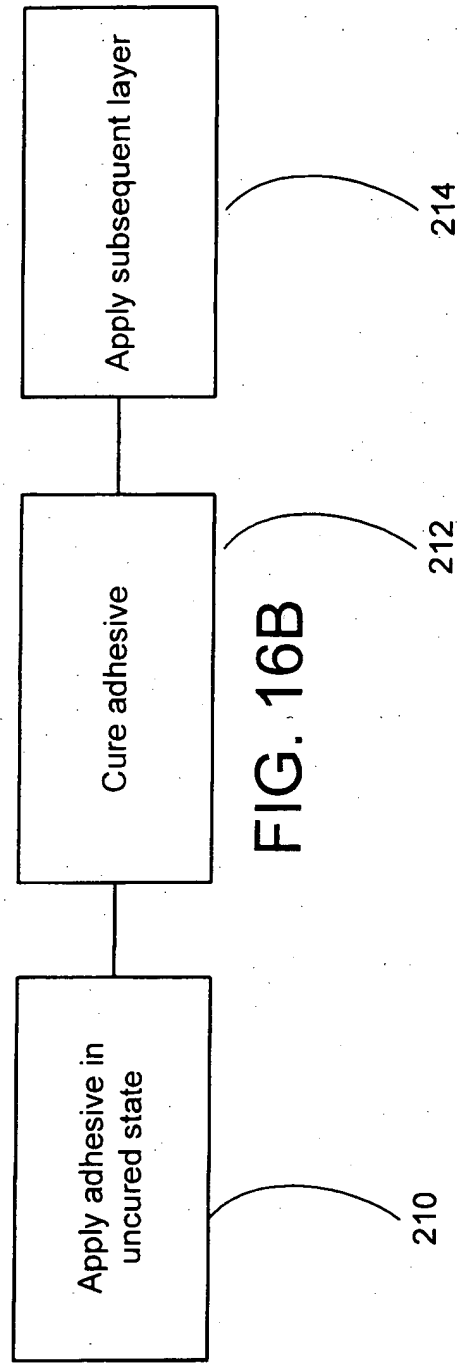


FIG. 16B

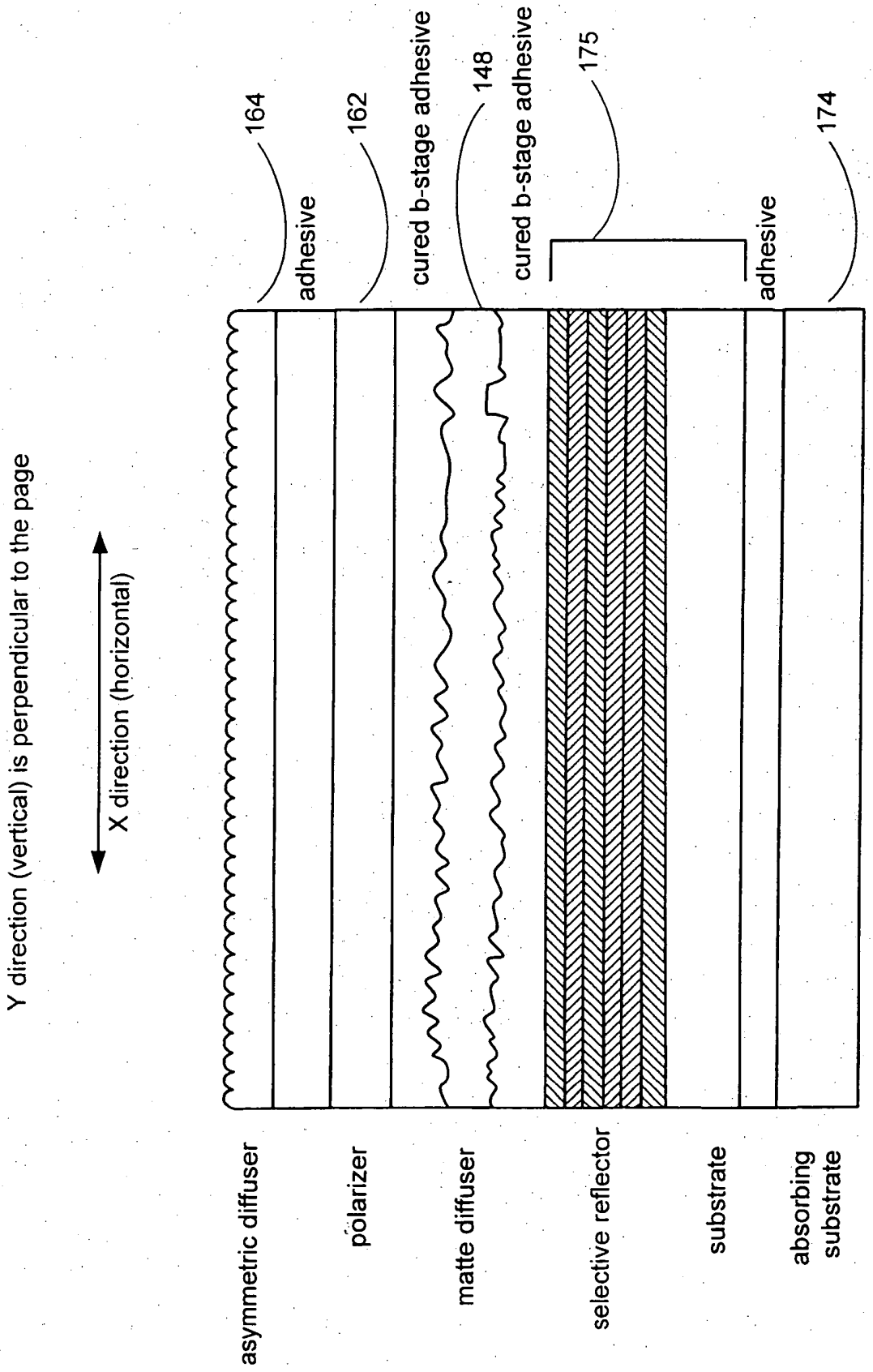

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
asymmetric diffuser
164
adhesive
polarizer
162
cured b-stage adhesive
matte diffuser
148
cured b-stage adhesive
selective reflector
175
substrate
adhesive
absorbing substrate
174

FIG. 17A

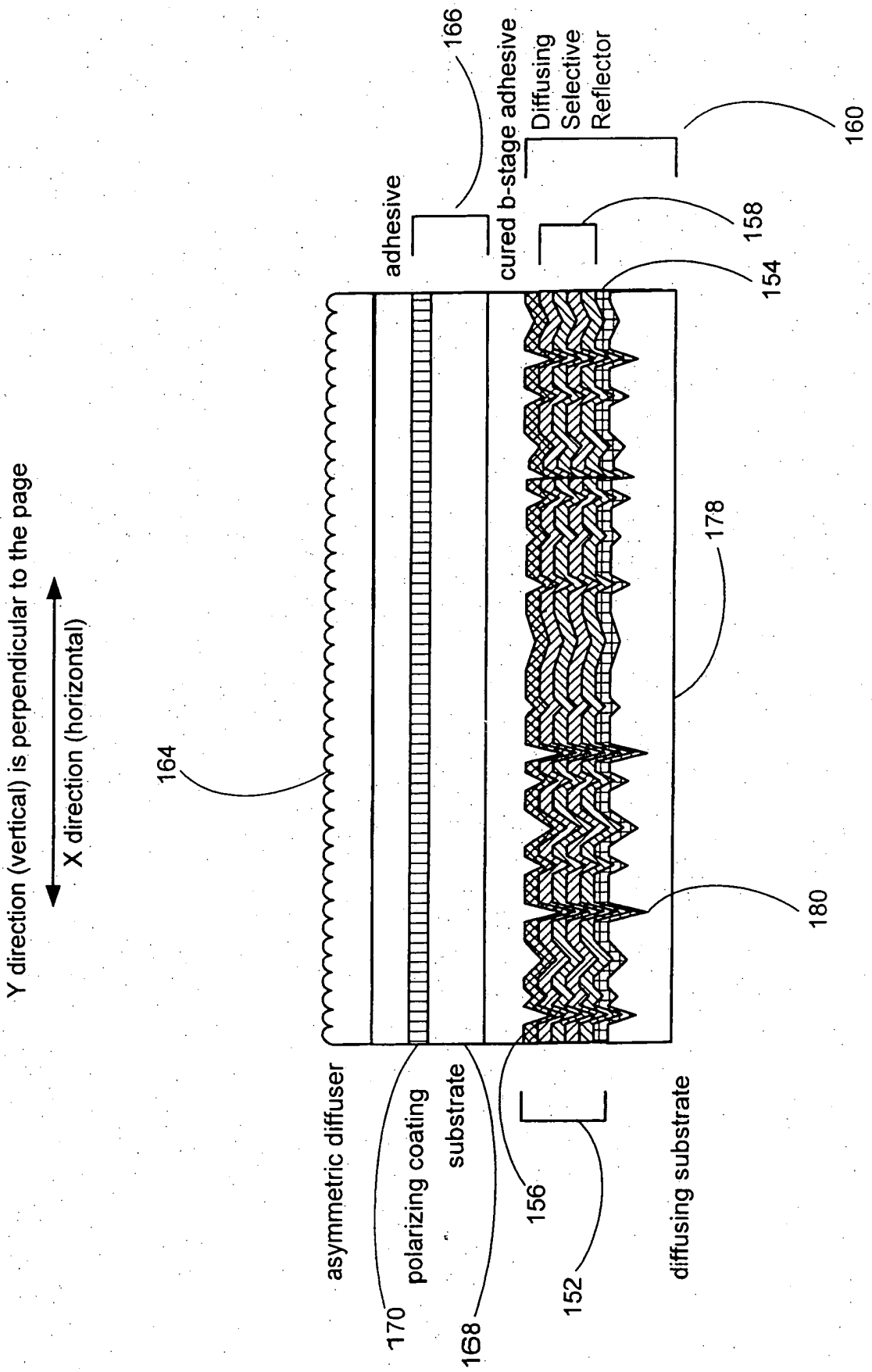

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
164
asymmetric diffuser
170
polarizing coating
168
substrate
156
152
diffusing substrate
178
180
adhesive
166
cured b-stage adhesive
158
154
Diffusing Selective Reflector
160

FIG. 17B

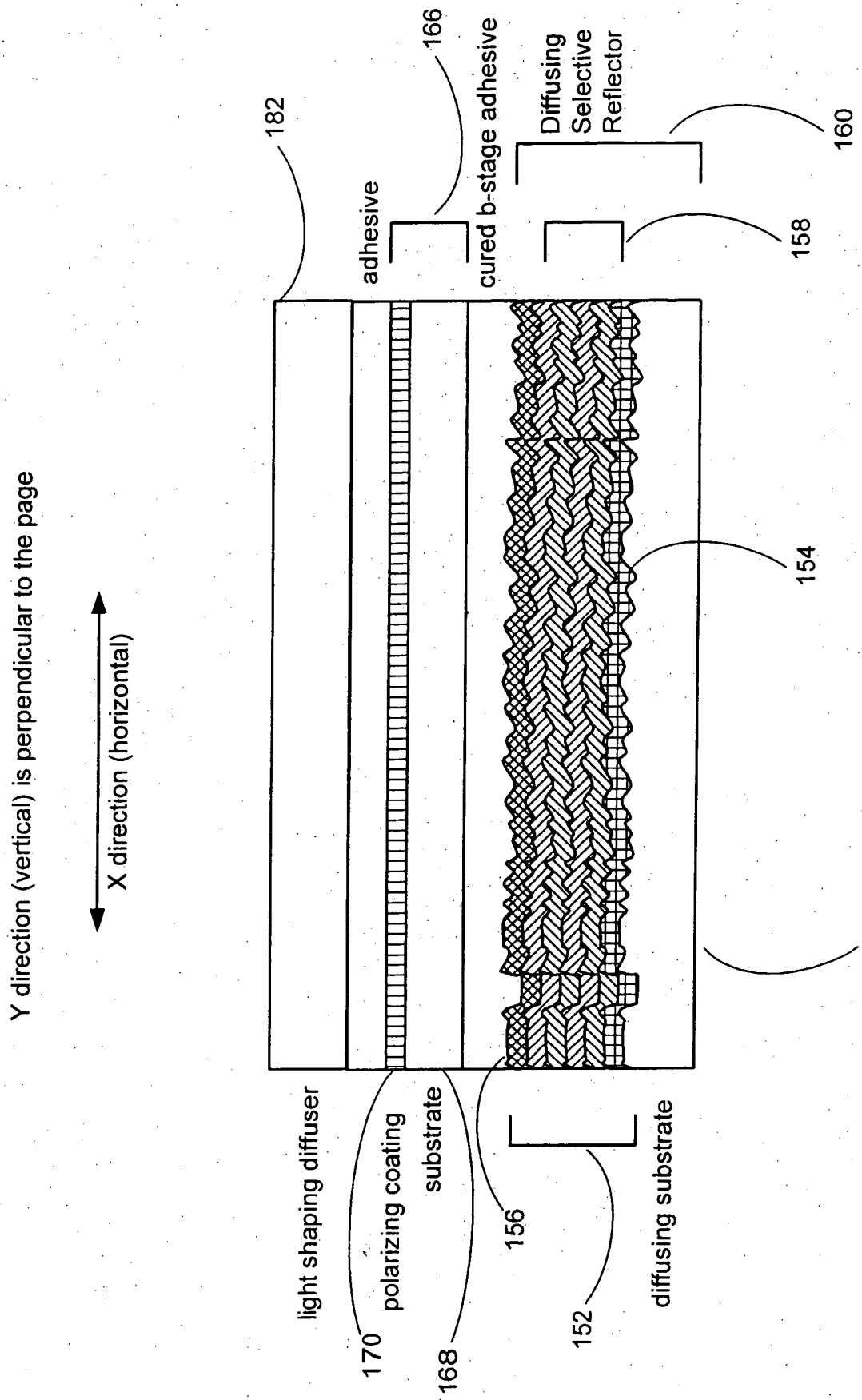

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
182
166
adhesive
cured b-stage adhesive
Diffusing Selective Reflector
160
158
154
150
light shaping diffuser
polarizing coating
substrate
156
152
diffusing substrate
170
168

FIG. 17C

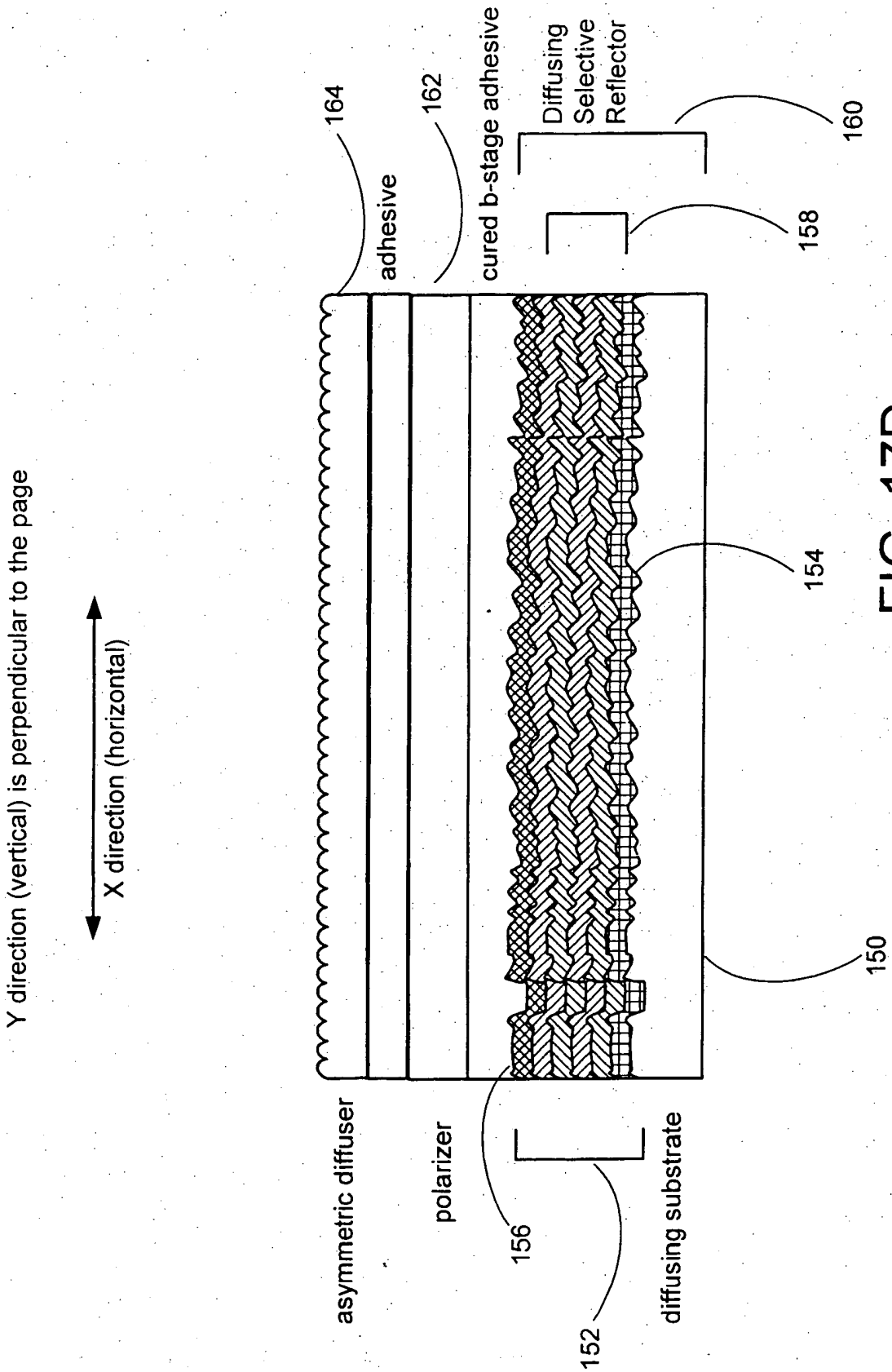

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
asymmetric diffuser
adhesive
cured b-stage adhesive
Diffusing Selective Reflector
polarizer
diffusing substrate
164
162
160
158
154
156
152
150

FIG. 17D

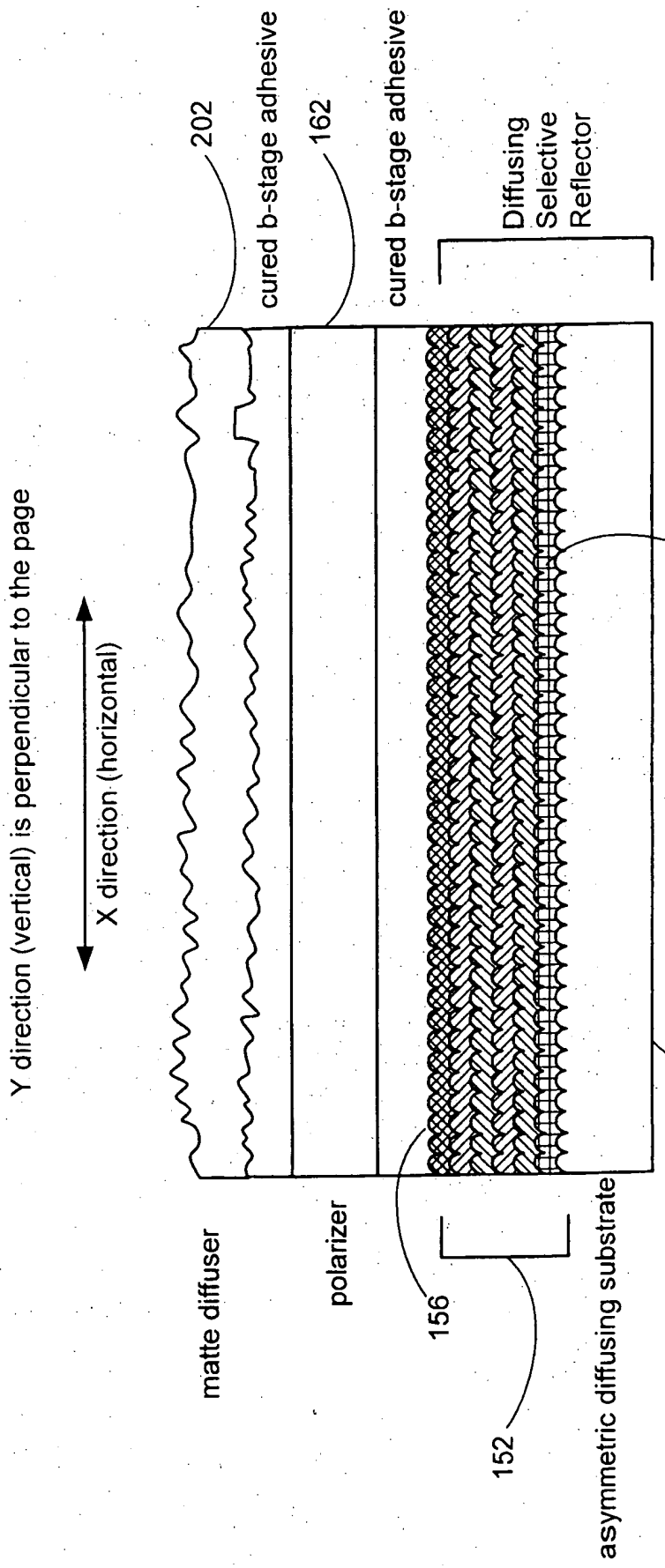

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
matte diffuser
polarizer
asymmetric diffusing substrate
cured b-stage adhesive
cured b-stage adhesive
Diffusing Selective Reflector
202
162
154
156
152
202

FIG. 17E

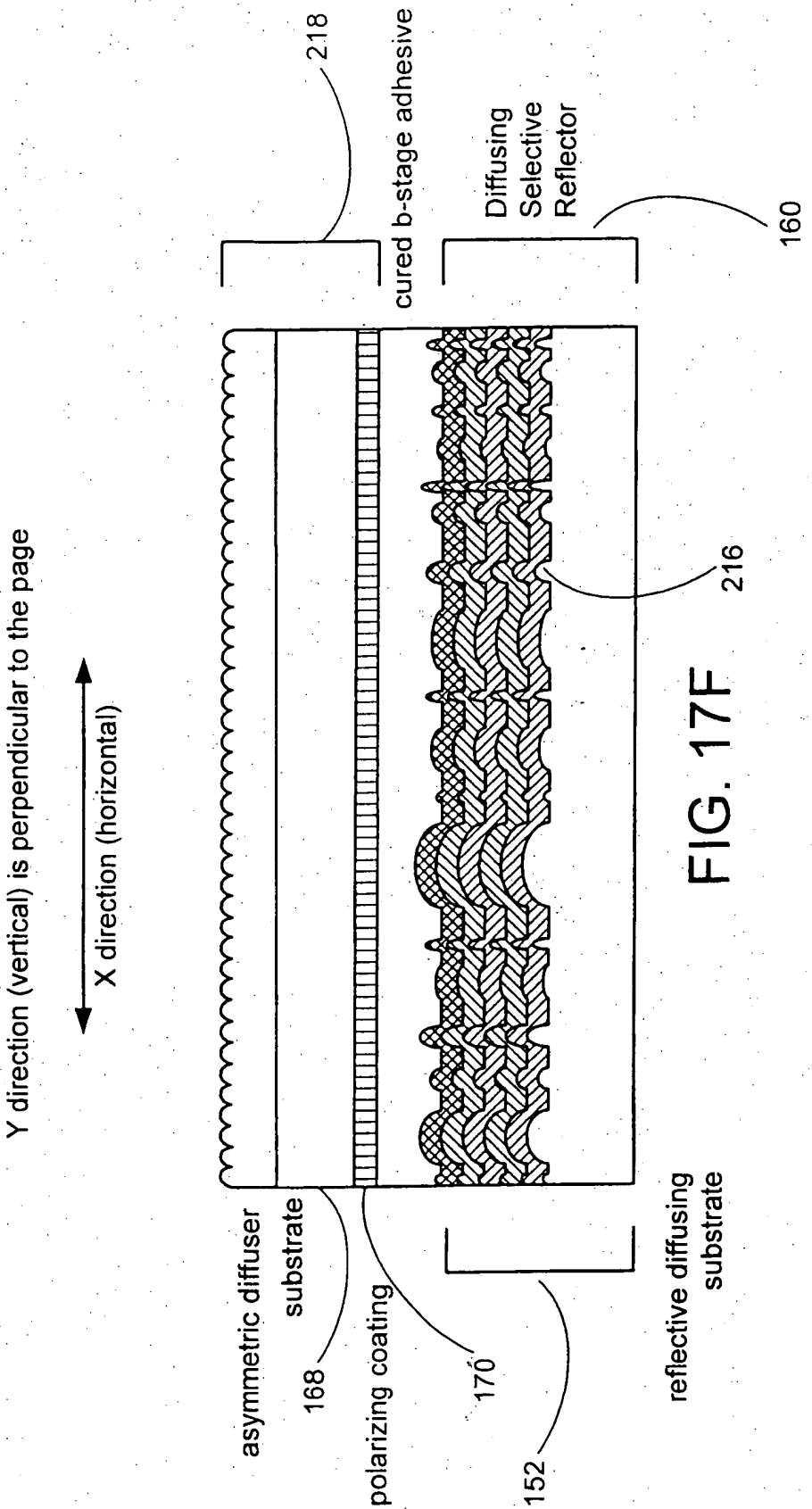

Y direction (vertical) is perpendicular to the page
X direction (horizontal)
218
cured b-stage adhesive
Diffusing
Selective
Reflector
160
216
asymmetric diffuser
substrate
168
polarizing coating
170
152
reflective diffusing
substrate

FIG. 17F

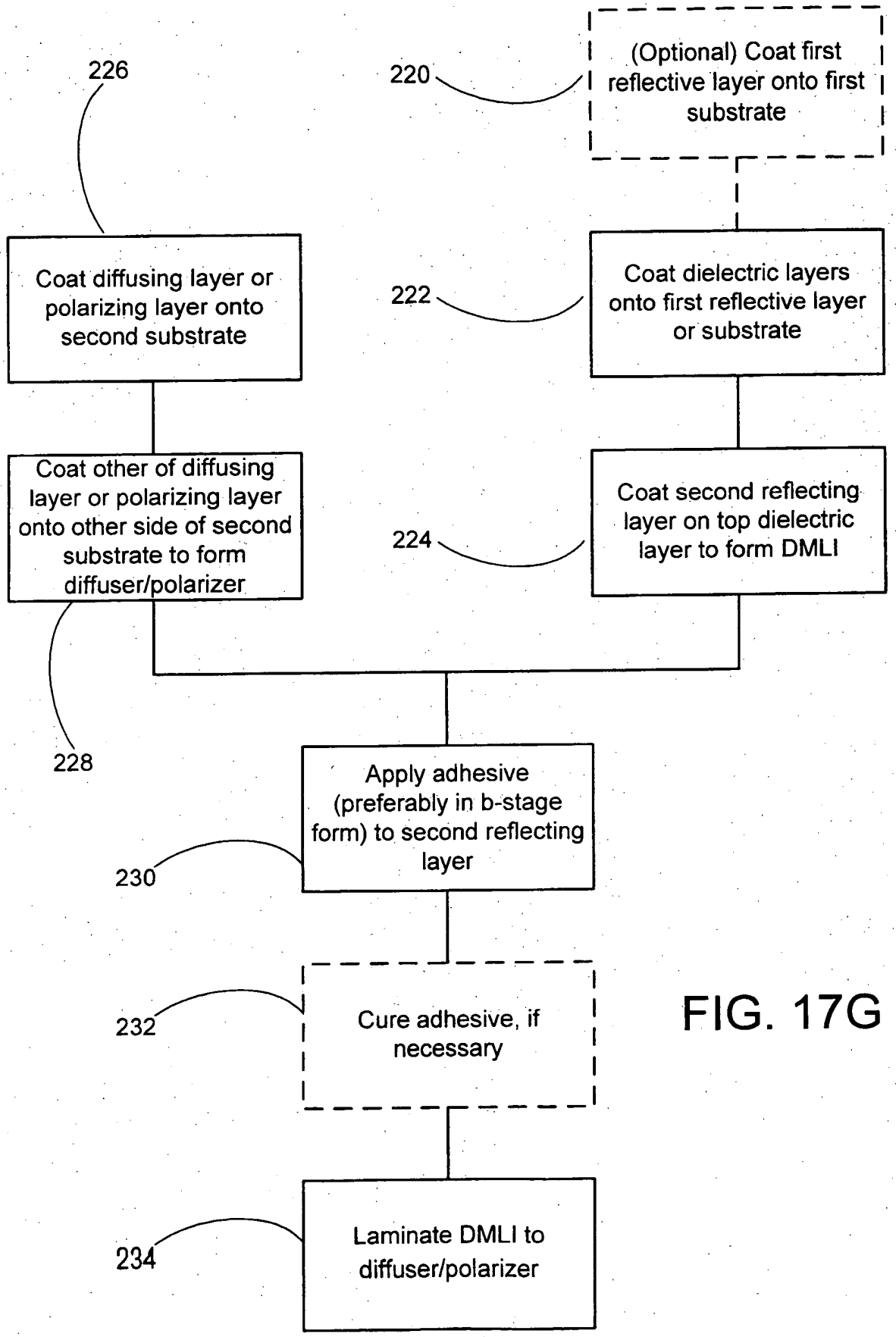

226
220
(Optional) Coat first reflective layer onto first substrate
Coat diffusing layer or polarizing layer onto second substrate
222
Coat dielectric layers onto first reflective layer or substrate
Coat other of diffusing layer or polarizing layer onto other side of second substrate to form diffuser/polarizer
224
Coat second reflecting layer on top dielectric layer to form DMLI
228
Apply adhesive (preferably in b-stage form) to second reflecting layer
230
232
Cure adhesive, if necessary
234
Laminate DMLI to diffuser/polarizer

FIG. 17G

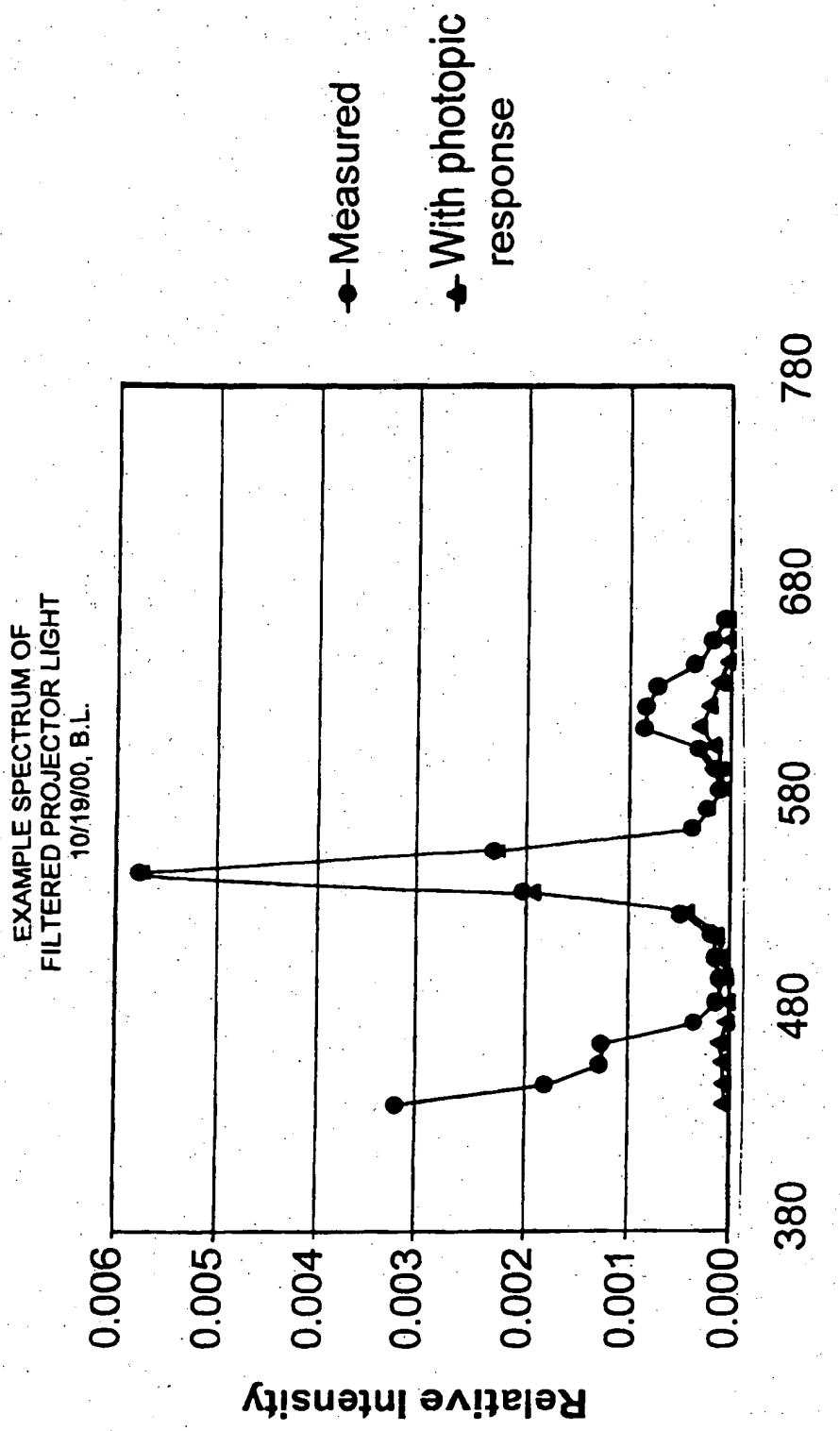

EXAMPLE SPECTRUM OF
FILTERED PROJECTOR LIGHT
10/19/00, B.L.
Measured
With photopic response
Relative Intensity
0.006
0.005
0.004
0.003
0.002
0.001
0.000
380
480
580
680
780
Wavelength (nm)

FIG. 18

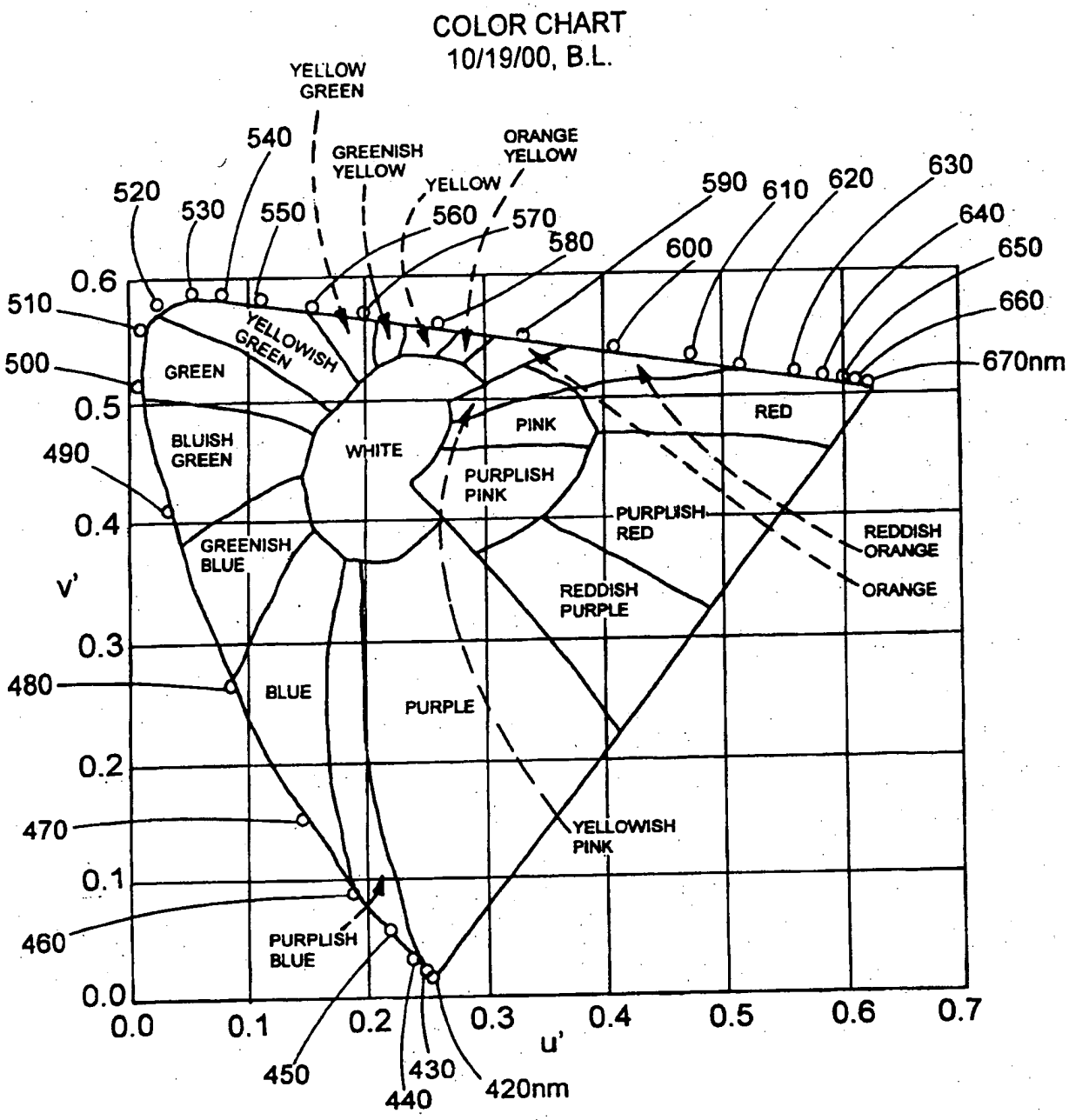

COLOR CHART
10/19/00, B.L.
YELLOW GREEN
GREENISH YELLOW
YELLOW
ORANGE YELLOW
520
530
540
550
560
570
580
590
600
610
620
630
640
650
660
670nm
510
500
490
480
470
460
450
440
430
420nm
YELLOWISH GREEN
GREEN
BLUISH GREEN
WHITE
PINK
RED
PURPLISH PINK
PURPLISH RED
REDDISH ORANGE
ORANGE
GREENISH BLUE
REDDISH PURPLE
BLUE
PURPLE
YELLOWISH PINK
PURPLISH BLUE
0.6
0.5
0.4
0.3
0.2
0.1
0.0
v'
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
u'

FIG. 19

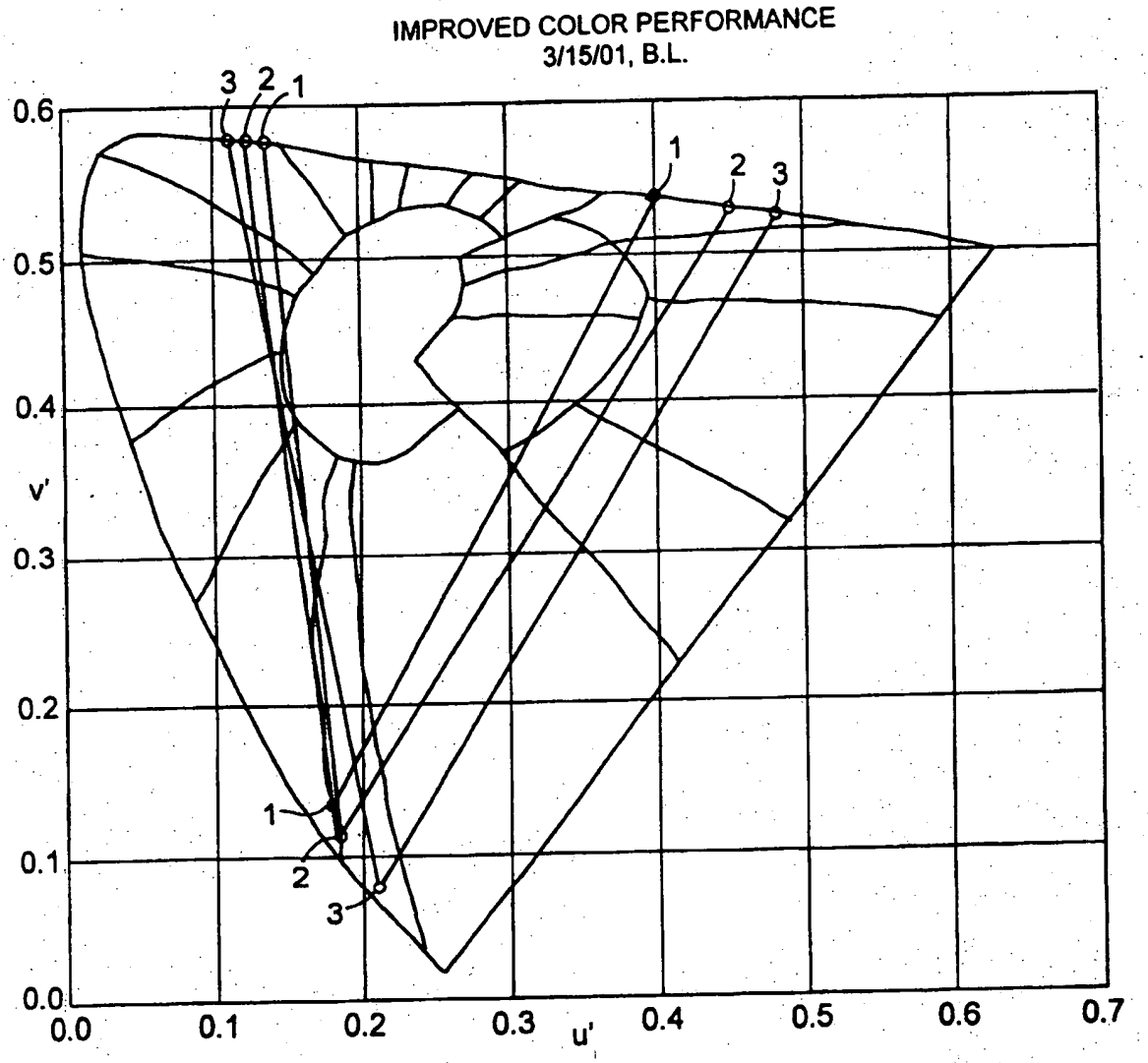
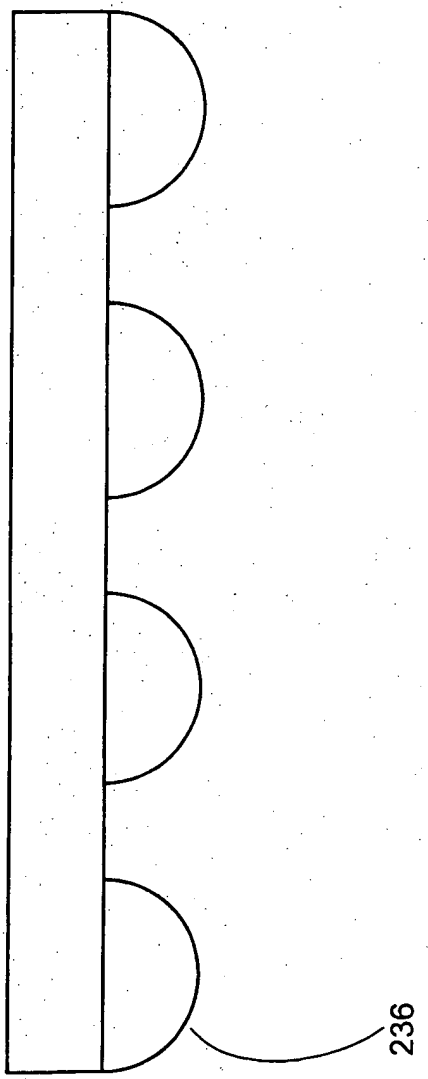


FIG. 20

1= projector on white screen
2= filtered projector on white screen
3= filtered projector on new screen

FIG. 21A



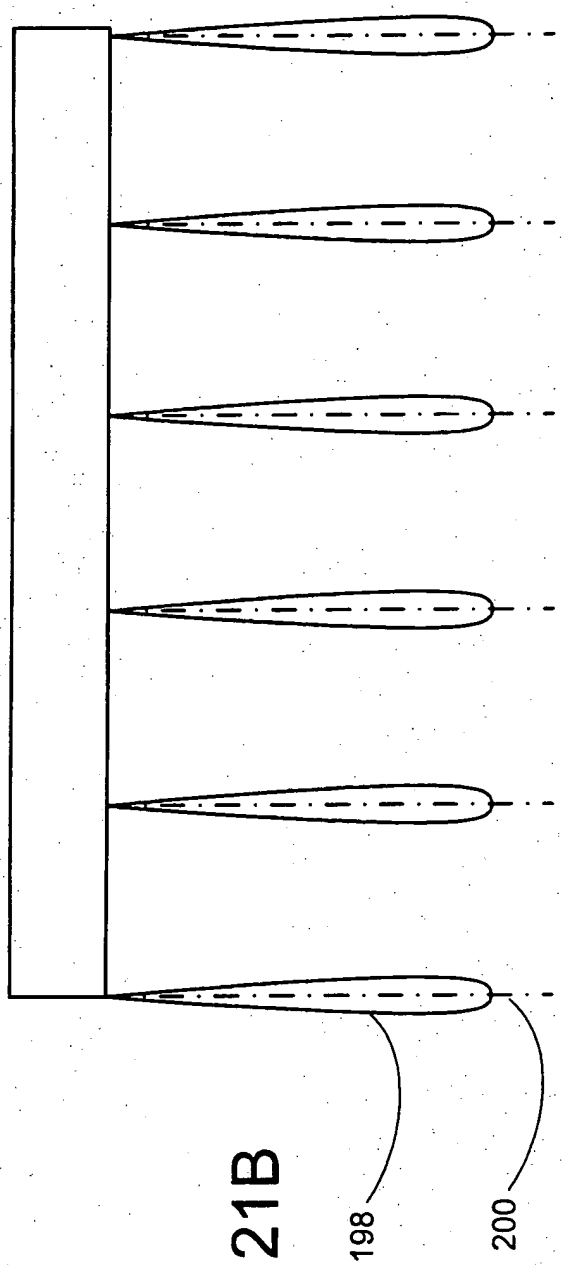
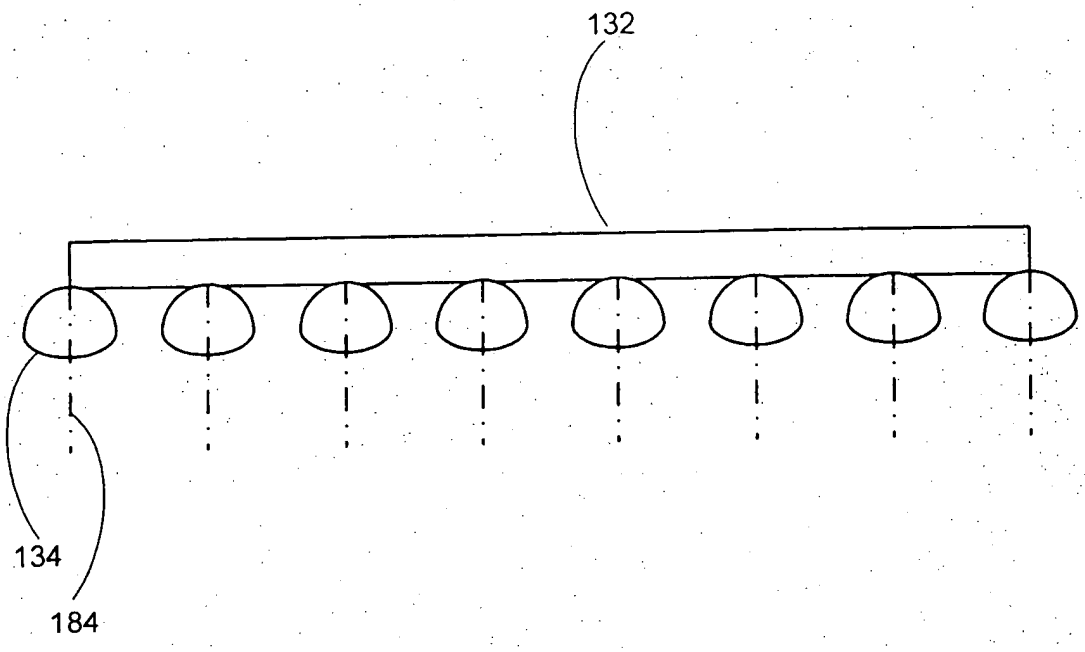


FIG. 21B



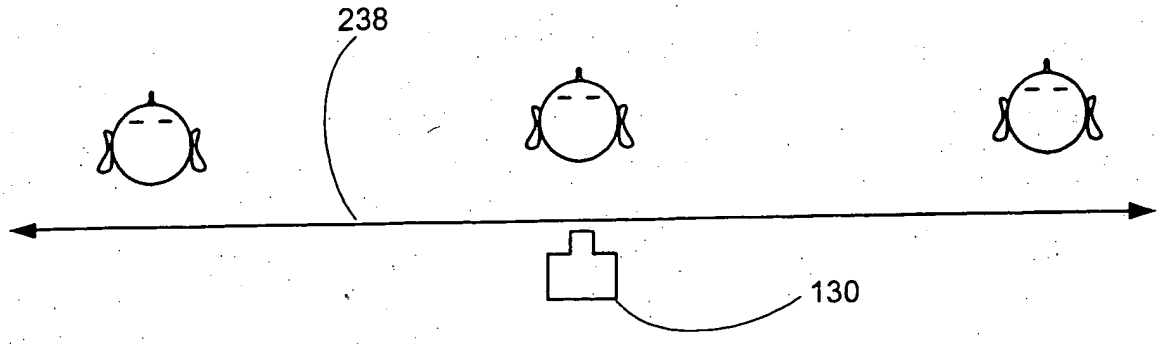
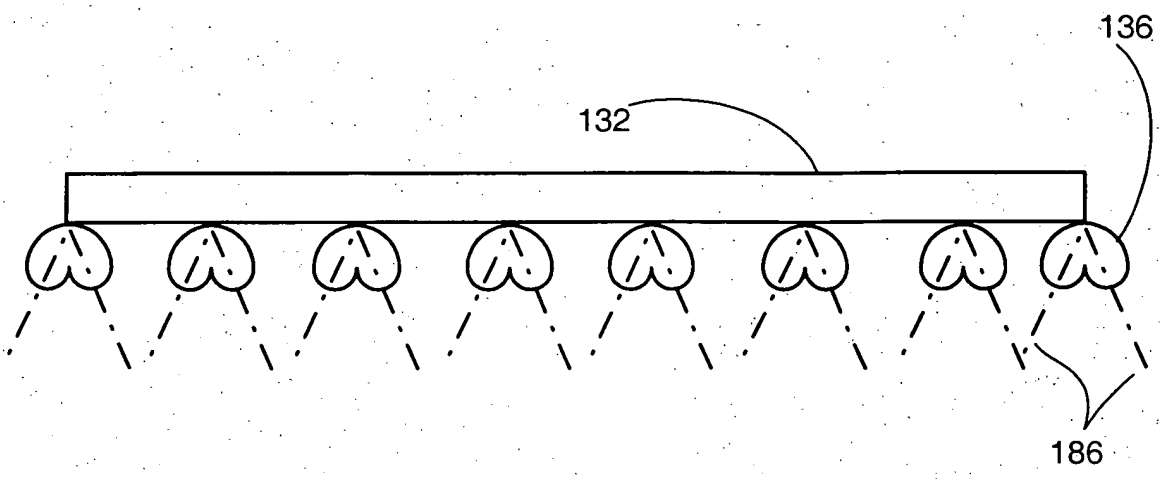


FIG. 22



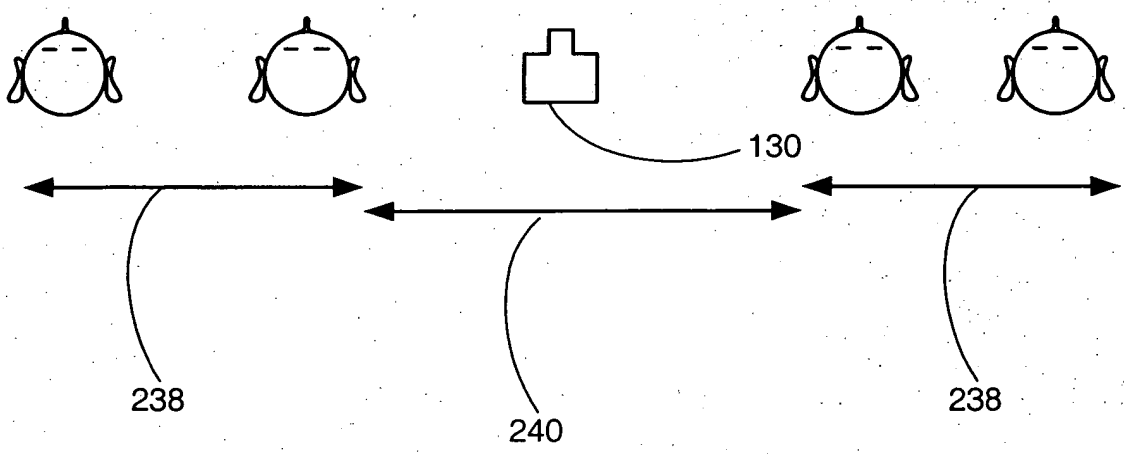


FIG. 23A

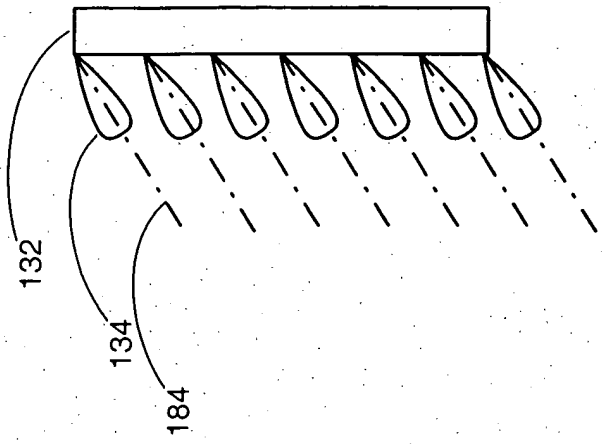
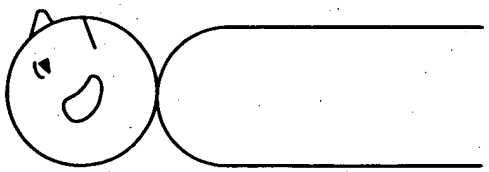
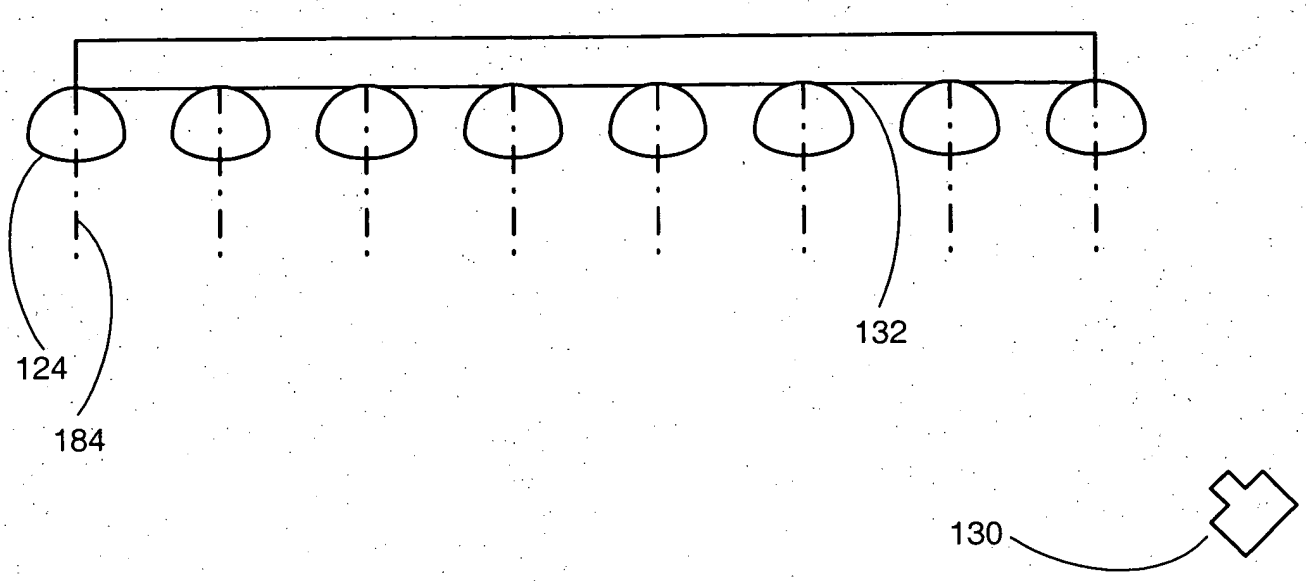


FIG. 23B





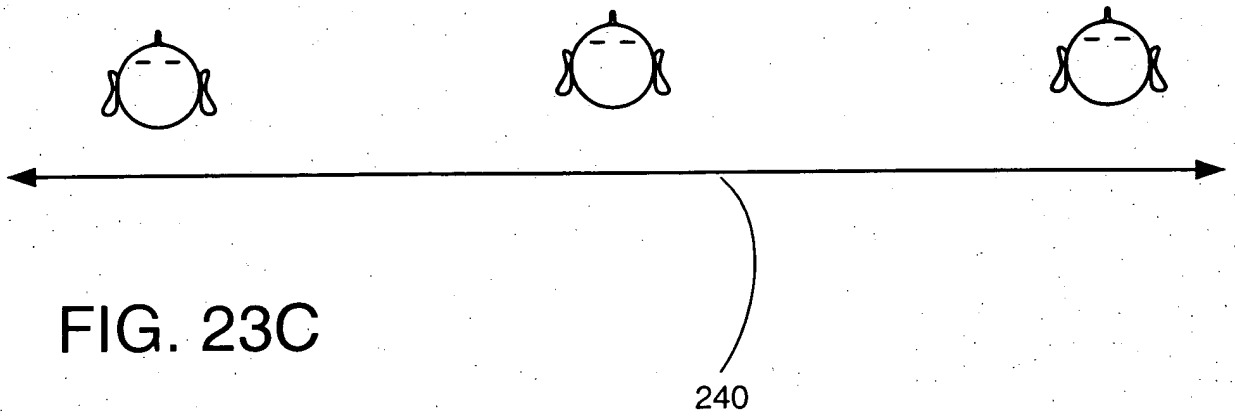


FIG. 23C